



[4910-13-P]

**DEPARTMENT OF TRANSPORTATION**

**Federal Aviation Administration**

**14 CFR Part 39**

**[Docket No. FAA-2018-0259; Product Identifier 2018-NE-09-AD; Amendment 39-19358; AD 2018-17-04]**

**RIN 2120-AA64**

**Airworthiness Directives; Rolls-Royce Corporation Engines**

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Final rule.

**SUMMARY:** We are adopting a new airworthiness directive (AD) for certain Rolls-Royce Corporation (RRC) AE 2100D2A and AE 2100D3 model turboprop engines and AE 3007A2 model turbofan engines. This AD was prompted by the possibility of a low-cycle fatigue failure on certain turbine wheels. This AD requires removing the affected turbine wheels at the next engine shop visit or before reaching the new reduced life limit, whichever occurs first, and replacing them with parts eligible for installation. We are issuing this AD to address the unsafe condition on these products.

**DATES:** This AD is effective [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

The Director of the Federal Register approved the incorporation by reference of certain publications listed in this AD as of [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

**ADDRESSES:** For service information identified in this final rule, contact Rolls-Royce Corporation, 450 South Meridian Street, Indianapolis, IN, 46225; phone: 317-230-3774. You may view this service information at the FAA, Engine and Propeller Standards Branch, 1200 District Avenue, Burlington, MA, 01803. For information on the

availability of this material at the FAA, call 781-238-7759. It is also available on the internet at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2018-0259.

### **Examining the AD Docket**

You may examine the AD docket on the Internet at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2018-0259; or in person at Docket Operations between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this final rule, the regulatory evaluation, any comments received, and other information. The address for Docket Operations (phone: 800-647-5527) is Docket Operations, U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE., Washington, DC 20590.

**FOR FURTHER INFORMATION CONTACT:** Kyri Zaroyiannis, Aerospace Engineer, Chicago ACO Branch, FAA, 2300 E. Devon Ave., Des Plaines, IL, 60018; phone: 847-294-7836; fax: 847-294-7834; email: [kyri.zaroyiannis@faa.gov](mailto:kyri.zaroyiannis@faa.gov).

### **SUPPLEMENTARY INFORMATION:**

#### **Discussion**

We issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 by adding an AD that would apply to certain RRC AE 2100D2A and AE 2100D3 model turboprop engines and AE 3007A2 model turbofan engines. The NPRM published in the Federal Register on April 30, 2018 (83 FR 18751). The NPRM was prompted by the possibility of a low-cycle fatigue failure on certain turbine wheels. The affected turbine wheels include 1<sup>st</sup>-stage gas generator turbine wheels, installed on AE 2100D2A and AE 2100D3 model turboprop engines, and 1<sup>st</sup>-stage high-pressure turbine (HPT) wheels, installed on AE 3007A2 turbofan engines. The NPRM proposed to require removing the affected turbine wheels at the next engine shop visit or before reaching the new reduced

life limit, whichever occurs first, and replacing them with parts eligible for installation. We are issuing this AD to address the unsafe condition on these products.

### **Comments**

We gave the public the opportunity to participate in developing this final rule. We have considered the comment received. RRC supported the NPRM.

### **Conclusion**

We reviewed the relevant data, considered the comments received, and determined that air safety and the public interest require adopting this final rule as proposed.

### **Related Service Information under 1 CFR part 51**

We reviewed RRC Alert Service Bulletin (ASB) AE 2100D2-A-72-090, Revision 1, dated July 11, 2014, and RRC ASB AE 2100D3-A-72-286, Revision 1, dated July 11, 2014 (one document, referred to herein as “RRC ASB AE 2100D2-A-72-090/AE 2100D3-A-72-286”), and RRC ASB AE 3007A-A-72-419, Revision 2, dated December 4, 2017. RRC ASB AE 2100D2-A-72-090/AE 2100D3-A-72-286 provides removal and replacement instructions and a new life limit for the affected 1<sup>st</sup>-stage gas generator turbine wheels installed on RRC AE 2100D2A and AE 2100D3 model turboprop engines. ASB AE 3007A-A-72-419 provides removal and replacement instructions and a new life limit for 1<sup>st</sup>-stage HPT wheels installed on RRC AE 3007A2 model turbofan engines. This service information is reasonably available because the interested parties have access to it through their normal course of business or by the means identified in the ADDRESSES section.

### **Costs of Compliance**

We estimate that this AD affects nine engines installed on airplanes of U.S. registry.

We estimate the following costs to comply with this AD:

### Estimated costs

Action	Labor cost	Parts cost	Cost per product	Cost on U.S. operators
Replace turbine wheels	0 work-hours x \$85 per hour = \$0	\$160,829	\$160,829	\$1,447,461

### Authority for this Rulemaking

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator. Subtitle VII: Aviation Programs, describes in more detail the scope of the Agency's authority.

We are issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701: "General requirements." Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

This AD is issued in accordance with authority delegated by the Executive Director, Aircraft Certification Service, as authorized by FAA Order 8000.51C. In accordance with that order, issuance of ADs is normally a function of the Compliance and Airworthiness Division, but during this transition period, the Executive Director has delegated the authority to issue ADs applicable to engines, propellers, and associated appliances to the Manager, Engine and Propeller Standards Branch, Policy and Innovation Division.

### Regulatory Findings

This AD will not have federalism implications under Executive Order 13132. This AD will not have a substantial direct effect on the States, on the relationship between the

national government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify that this AD:

- (1) Is not a “significant regulatory action” under Executive Order 12866,
- (2) Is not a “significant rule” under DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979),
- (3) Will not affect intrastate aviation in Alaska, and
- (4) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

#### **List of Subjects in 14 CFR Part 39**

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

#### **Adoption of the Amendment**

Accordingly, under the authority delegated to me by the Administrator, the FAA amends 14 CFR part 39 as follows:

#### **PART 39 - AIRWORTHINESS DIRECTIVES**

- 1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

#### **§ 39.13 [Amended]**

- 2. The FAA amends § 39.13 by adding the following new airworthiness directive (AD):

2018-17-04 **Roll-Royce Corporation (Type Certificate previously held by Allison Engine Company)**: Amendment 39-19358; Docket No. FAA-2018-0259; Product Identifier 2018-NE-09-AD.

#### **(a) Effective Date**

This AD is effective [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

**(b) Affected ADs**

None.

**(c) Applicability**

This AD applies to:

(1) Rolls-Royce Corporation (RRC) AE 2100D2A turboprop engines with 1<sup>st</sup>-stage gas generator turbine wheels, part number (P/N) 23089692, with serial numbers (S/Ns) MW65898 or MW68310, installed.

(2) RRC AE 2100D3 turboprop engines with 1<sup>st</sup>-stage gas generator turbine wheels, P/N 23088906, with S/Ns MW65895, MW65896, MW65900, MW65901, MW65903, MW68305, MW68306, MW68307, MW68312, MW68314, MW68316, MW68318, or MW68319, installed.

(3) RRC AE 3007A2 turbofan engines with 1<sup>st</sup>-stage high-pressure turbine (HPT) wheels, P/N 23088906, with S/Ns MW65894, MW68303, or MW68315, installed.

**(d) Subject**

Joint Aircraft System Component (JASC) Code 7250, Turbine section.

**(e) Unsafe Condition**

This AD was prompted by the possibility of steel inclusions in the turbine wheel forging. We are proposing this AD to prevent a low-cycle fatigue failure of a 1<sup>st</sup>-stage gas generator turbine wheel or 1<sup>st</sup>-stage HPT wheel. The unsafe condition, if not addressed, could result in uncontained turbine wheel release, damage to the engine, and damage to the airplane.

**(f) Compliance**

Comply with this AD within the compliance times specified, unless already done.

**(g) Required Actions**

(1) Remove the affected 1<sup>st</sup>-stage gas generator turbine wheel and replace with a part eligible for installation at the next engine shop visit or before exceeding the life limit

of 4,800 engine cycles, whichever occurs first, in accordance with the Accomplishment Instructions, Paragraph 2, of RRC Alert Service Bulletin (ASB) AE 2100D2-A-72-090, Revision 1, dated July 11, 2014, and RRC ASB AE 2100D3-A-72-286, Revision 1, dated July 11, 2014 (co-published as one document).

(2) Remove the affected 1<sup>st</sup>-stage HPT wheel and replace with a part eligible for installation at the next engine shop visit or before exceeding the life limit of 5,600 engine cycles, whichever occurs first, in accordance with the Accomplishment Instructions, Paragraph 2, of RRC ASB AE 3007A-A-72-419, Revision 2, dated December 4, 2017.

**(h) Definition**

For the purpose of this AD, an “engine shop visit” is the induction of an engine into the shop for maintenance involving the separation of pairs of major mating engine flanges, except that the separation of engine flanges solely for the purposes of transportation without subsequent engine maintenance is not an engine shop visit.

**(i) Alternative Methods of Compliance (AMOCs)**

(1) The Manager, Chicago ACO Branch, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or local Flight Standards District Office, as appropriate. If sending information directly to the manager of the certification office, send it to the attention of the person identified in paragraph (j) of this AD.

(2) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the local flight standards district office/certificate holding district office.

**(j) Related Information**

For more information about this AD, contact Kyri Zaroyiannis, Aerospace Engineer, Chicago ACO Branch, FAA, 2300 E. Devon Ave., Des Plaines, IL, 60018; phone: 847-294-7836; fax: 847-294-7834; email: kyri.zaroyiannis@faa.gov.

**(k) Material Incorporated by Reference**

(1) The Director of the Federal Register approved the incorporation by reference (IBR) of the service information listed in this paragraph under 5 U.S.C. 552(a) and 1 CFR part 51.

(2) You must use this service information as applicable to do the actions required by this AD, unless the AD specifies otherwise.

(i) Rolls-Royce Corporation (RRC) Alert Service Bulletin (ASB) AE 2100D2-A-72-090, Revision 1, dated July 11, 2014, and RRC ASB AE 2100D3-A-72-286, Revision 1, dated July 11, 2014 (co-published as one document).

(ii) RRC ASB AE 3007A-A-72-419, Revision 2, dated December 4, 2017.

(3) For RRC service information identified in this AD, contact Rolls-Royce Corporation, 450 South Meridian Street, Indianapolis, IN, 46225; phone: 317-230-3774.

(4) You may view this service information at FAA, Engine and Propeller Standards Branch, 1200 District Avenue, Burlington, MA, 01803. For information on the availability of this material at the FAA, call 781-238-7759.



(5) You may view this service information that is incorporated by reference at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to: <http://www.archives.gov/federal-register/cfr/ibr-locations.html>.

Issued in Burlington, Massachusetts, on August 13, 2018.

Karen M. Grant,  
Acting Manager, Engine and Propeller Standards Branch,  
Aircraft Certification Service.

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